

## Background

Gastrointestinal haemorrhage is a common reason for emergency hospital admission, with approximately 172 admissions per 100 000 adults per year in the UK. It may vary in clinical severity, from insignificant bleeding to mortality. It is important to identify patients at high risk of adverse events, commonly defined as risk of >5% recurrent bleeding and >1% mortality. The Blatchford score was developed in 2000 to predict the need for treatment in patients admitted to hospital who present with gastrointestinal haemorrhage. Need for treatment is defined as a combined outcome of need for endoscopic/surgical intervention and/or blood transfusion, mortality, rebleeding or substantial fall in haemoglobin concentration after admission. Total scores range from 0 to 23. According to the original study a score of 0 indicates that the patient is considered to be low risk and does not require treatment and can be safely discharged. The derivation study indicated that a score of 0 is associated with 99% sensitivity and 28% specificity.

Admission risk marker	Score component value
<b>Blood urea (mmol/L)</b>	
≥6.5 to >8.0	2
≥8.0 to >10.0	3
≥10.0 to >25.0	4
≥25	6
<b>Haemoglobin (g/L) for men</b>	
≥120 to <130	1
≥100 to <120	3
<100	6
<b>Haemoglobin (g/L) for women</b>	
≥100 to <120	1
<100	6
<b>Systolic blood pressure (mmHg)</b>	
100-109	1
90-99	2
<90	3
<b>Other markers</b>	
Pulse ≥100 (per min)	1
Presentation with melaena	1
Presentation with syncope	2
Hepatic disease	2
Cardiac failure	2

## Objective

The objective of this study is to validate the Blatchford score in predicting need for treatment in hospital patients with suspected gastrointestinal haemorrhage.

## Methods

A systematic search of literature from January 2000 to July 2011 was conducted. The diagnostic accuracy of the individual cut-points for the Blatchford score was assessed using discrimination analysis. Results are presented as summary sensitivities and specificities and corresponding 95% confidence intervals (CIs) and were calculated using a random effects bivariate model. Heterogeneity was assessed using the variance of logit transformed sensitivity and specificity, where smaller values indicate less heterogeneity across studies. The methodological quality was assessed using the QUADAS tool.

## Results

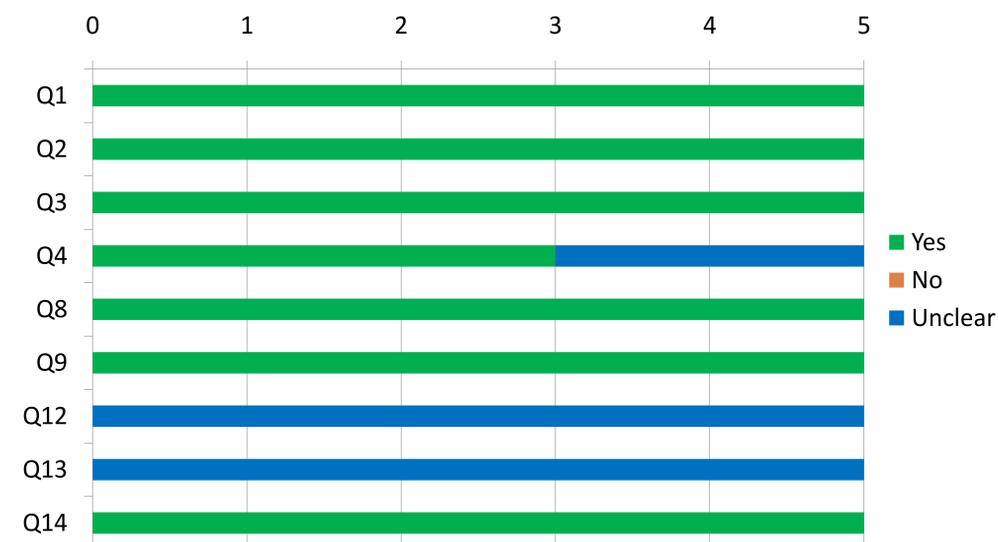
The search strategy retrieved 2012 articles. Five studies (n=4040) were included in the preliminary analysis presented here. The diagnostic accuracy suggested that a cut point of 0 is useful for ruling out the likelihood of need for intervention, however, the low specificity suggests that some patients will receive interventions unnecessarily. In comparison, a cut-point of ≥1 (i.e. a score of 1 or above) is also useful for ruling out the need for intervention due to the relatively high sensitivity. It is also associated with relatively higher specificity suggesting that fewer patients will receive interventions unnecessarily. A cut-point of ≥2 onwards is associated with a decrease in sensitivity, that may not be considered clinically acceptable. These results were all associated with low heterogeneity.

## Summary estimates of the sensitivity and specificity for the Blatchford Score

Blatchford score	No. of studies	Sensitivity (95% CI)	Variance logit (sensitivity)	Specificity (95% CI)	Variance logit (specificity)
0	5	0.100 (0.99-0.100)	0.03 (5.25e-06 124.74)	0.30 (0.19-0.45)	0.48 (0.13-1.80)
≥1	4	0.98 (0.97-0.99)	0.25 (0.01- 4.61)	0.46 (0.36-0.56)	0.16 (0.03-0.81)
≥2	4	0.96 (0.95-0.97)	.01 (5.39e-07- 350.27)	0.56 (0.46-0.66)	0.16 (0.03-0.83)
≥3	4	0.95 (0.93-0.96)	0.02 (0.00-16.85)	0.66 (0.54-0.77)	0.25 (0.05-1.22)
≥4	4	0.91 (0.88-0.92)	0.00 (2.19e-25- 8.04e+16)	0.74 (0.63-0.83)	0.26 (0.05-1.22)
≥5	4	0.86 (0.83-0.88)	0.01 (0.00-2.46)	0.82 (0.71-0.89)	0.33 (0.07-1.60)

## Quality assessment

The methodological quality of the study was assessed using the QUADAS tool. Nine of the 14 items included in the measure were relevant in the current study. Overall, the methodological quality of the studies was good. Most items were considered and reported by authors.



## Preliminary conclusions

At cut points 0 and ≥1, the Blatchford score is useful at 'ruling out' the need for intervention in patients with suspected gastrointestinal haemorrhage. Implementation of the Blatchford score at either cut-point is a useful triage rule in an A&E setting. Whether the cut-point of 0 or ≥1 is used depends on the willingness of health professionals to trade off slightly diminished accuracy (with the risk of missing 2% of haemorrhages that will require intervention) with enhanced specificity (admission and treatment of individuals who could be safely managed expectantly). The results presented here are based on preliminary data. Additional data will allow us to determine separate summary estimates for individual outcomes of endoscopic/surgical intervention, blood transfusion, mortality and rebleeding.

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